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## Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

## Listing of Claims:

1. (Currently Amended) An intravascular probe comprising:

a sheath having a distal portion and a proximal portion;

a first optical waveguide extending along the sheath, the first optical waveguide being configured to carry optical radiation between the distal and proximal portions;

an optical bench disposed at the distal portion, in which a distal end of the first optical waveguide is seated;

a first beam redirector disposed at the distal portion on the optical bench in optical communication with the first optical waveguide;

an optical detector configured to receive optical radiation from the first optical waveguide;

an ultrasound transducer disposed at the distal portion <u>and coupled to the optical</u> <u>bench</u>, the ultrasound transducer being configured to couple ultrasound energy between the intravascular probe and a transmission medium; and

a wire extending along the sheath in electrical communication with the ultrasound transducer.

2. (Currently Amended) The intravascular probe of claim 1, further comprising:

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a second optical waveguide extending along the sheath, the second optical waveguide being configured to carry optical radiation between the distal and proximal portions, and having a distal end seated in the optical bench;

a second beam redirector disposed at the distal portion on the optical bench in optical communication with the second optical waveguide.

- 3. (Original) The intravascular probe of claim 2, wherein the second beam redirector is configured to redirect an axially directed beam of optical radiation incident thereon from the second optical waveguide into a beam propagating along a direction having a radial component.
- 4. (Original) The intravascular probe of claim 2, further comprising an optical source configured to couple optical radiation into the second optical waveguide.
  - 5. (Currently Amended) An intravascular probe comprising:
    - a sheath having a distal portion and a proximal portion;
  - a first optical waveguide extending along the sheath, the first optical waveguide being configured to carry optical radiation between the distal and proximal portions;

an optical bench disposed at the distal portion, in which a distal end of the first optical waveguide is seated;

a first beam redirector disposed at the distal portion on the optical bench in optical communication with the first optical waveguide;

a second optical waveguide extending along the sheath, the second optical waveguide being configured to carry optical radiation between the distal and proximal portions, and having a distal end seated in the optical bench;

a second beam redirector disposed at the distal portion on the optical bench in optical communication with the second optical waveguide;

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an ultrasound transducer disposed at the distal portion <u>and coupled to the optical</u> <u>bench</u>, the ultrasound transducer being configured to couple ultrasound energy between the intravascular probe and a transmission medium; and

a wire extending along the sheath in electrical communication with the ultrasound transducer.

- 6. (Original) The intravascular probe of claim 5, wherein the first beam redirector is configured to redirect an axially directed beam of optical radiation incident thereon from the first optical waveguide into a beam propagating along a direction having a radial component.
- 7. (Original) The intravascular probe of claim 5, further comprising an optical detector configured to receive optical radiation from the first optical waveguide.
- 8. (Original) The intravascular probe of claim 5, further comprising an optical source configured to couple optical radiation into the first optical waveguide.
- 9. (Original) The intravascular probe of claim 8, wherein the optical source is configured to emit infrared radiation.
- 10. (Original) The intravascular probe of claim 5, wherein the first optical waveguide comprises an optical fiber.
- 11. (Original) The intravascular probe of claim 5, wherein the first beam redirector comprises an optical reflector.
- 12. (Original) The intravascular probe of claim 5, wherein the first beam redirector comprises a prism.
- 13. (Original) The intravascular probe of claim 5, wherein the first beam redirector comprises a bend in a distal tip of the first optical waveguide.
- 14. (Original) The intravascular probe of claim 5, wherein the ultrasound transducer comprises a piezoelectric transducer.

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15. (Original) The intravascular probe of claim 5, wherein the sheath comprises a material that is transparent to infrared radiation.

- 16. (Original) The intravascular probe of claim 5, wherein the first beam redirector is rigidly connected to the ultrasound transducer.
- 17. (Original) The intravascular probe of claim 5, wherein the first beam redirector is flexibly connected to the ultrasound transducer.
- 18. (Original) The intravascular probe of claim 5, wherein the first beam redirector is configured to emit light from a first axial location with respect to a longitudinal axis of the sheath, and the ultrasound transducer is configured to emit ultrasound energy from the first axial location.
- 19. (Original) The intravascular probe of claim 5, wherein the first beam redirector is configured to emit light from a first axial location with respect to a longitudinal axis of the sheath, and the ultrasound transducer is configured to emit ultrasound energy from a second axial location different from the first axial location.
- 20. (Currently Amended) The intravascular probe of claim 5, further comprising a rotatable cable surrounding the first optical waveguide and the wire, the rotatable cable being configured to coaxially rotate the first beam <u>redirector</u> and the ultrasound transducer.
  - 21. (Original) The intravascular probe of claim 5, further comprising:
  - a plurality of beam redirectors circumferentially disposed about a longitudinal axis of the sheath;
  - a plurality of optical waveguides in optical communication with the plurality of beam redirectors; and
  - a plurality of ultrasound transducers circumferentially disposed about the longitudinal axis.

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22. (New) The intravascular probe of claim 1, further comprising a rotatable cable surrounding the first optical waveguide and the wire, the rotatable cable being configured to coaxially rotate the first beam redirector and the ultrasound transducer.

- 23. (New) The intravascular probe of claim 22, wherein the optical bench is disposed beyond a distal end of the cable.
  - 24. (New) The intravascular probe of claim 20, wherein the optical bench is disposed beyond a distal end of the cable.
  - 25. (New) The intravascular probe of claim 1, wherein the ultrasound transducer is rigidly coupled to the optical bench.
  - 26. (New) The intravascular probe of claim 1, wherein the ultrasound transducer is flexibly coupled to the optical bench.
  - 27. (New) The intravascular probe of claim 5, wherein the ultrasound transducer is rigidly coupled to the optical bench.
  - 28. (New) The intravascular probe of claim 5, wherein the ultrasound transducer is flexibly coupled to the optical bench.